



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>C08G 59/06, 59/68, C08L 63/00, C09J 163/00</b>	<b>A3</b>	<b>(11) International Publication Number:</b> <b>WO 00/22024</b> <b>(43) International Publication Date:</b> 20 April 2000 (20.04.00)
<b>(21) International Application Number:</b> PCT/US99/22991 <b>(22) International Filing Date:</b> 30 September 1999 (30.09.99) <b>(30) Priority Data:</b> 09/170,597 13 October 1998 (13.10.98) US <b>(71) Applicant:</b> 3M INNOVATIVE PROPERTIES COMPANY [US/US]; 3M Center, P.O. Box 33427, Saint Paul, MN 55133-3427 (US). <b>(72) Inventors:</b> TARBUTTON, Kent, S.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). ROBINS, Janis; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). HORVATH, Daniel, J.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). <b>(74) Agents:</b> KNECHT, Harold, C., III et al.; 3M Innovative Properties Company, Office of Intellectual Property Counsel, P.O. Box 33427, Saint Paul, MN 55133-3427 (US).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>  <b>(88) Date of publication of the international search report:</b> 8 September 2000 (08.09.00)
<b>(54) Title:</b> HIGH STRENGTH EPOXY ADHESIVE AND USES THEREOF		
<b>(57) Abstract</b> <p>An epoxy composition effective for forming a thermally curable structural adhesive, and in particular, a one-part or two-part epoxy composition that when cured can obtain preferred and improved physical and chemical characteristics useful in structural assembly applications.</p>		

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# INTERNATIONAL SEARCH REPORT

Int'l Application No  
PCT/US 99/22991

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C08G59/06 C08G59/68 C08L63/00 C09J163/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08G C08L C09J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 325 058 A (MINNESOTA MINING & MFG) 26 July 1989 (1989-07-26) the whole document	1-21
A	----	27
X	US 5 280 067 A (TARBUTTON KENT S ET AL) 18 January 1994 (1994-01-18) the whole document	1-21
A	figures 1,2	27
X	US 3 966 837 A (RIEW CHANGKIU K ET AL) 29 June 1976 (1976-06-29) the whole document	1-21
A	----- -/-	27

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

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"E" earlier document but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

8 May 2000

Date of mailing of the international search report

23.05.00

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Russell, G

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/22991

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 092 336 A (DUNLOP LTD) 26 October 1983 (1983-10-26) the whole document	1-20
A	-----	27
A	US 5 248 559 A (OKUI KAZUYUKI ET AL) 28 September 1993 (1993-09-28) the whole document -----	1-21, 27

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 99/22991

### Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 22-26  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

#### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box I.2

Claims Nos.: 22-26

Present claims 22-26 relate to an adhesively bonded assembly comprising frame and panel members, said panels being adhesively bonded to each other by a mass of any structural adhesive according to Figure 6 of the application.

As the nature of said adhesive mass is not specified, these present claims relate to an extremely large number of possible assemblies, any assembly comprising a frame and panel which is adhered by an adhesive mass. Support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT is to be found, however, for only a very small proportion of the adhesively bonded assemblies claimed. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely those parts relating to the thermally cured epoxy compositions, methods of assembling comprising using said thermally cured epoxy adhesive, and assembly in which the adhesive mass is the epoxy composition.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-21,27

A thermally cured epoxy composition (clams 1,2).

A structure comprising said cured composition (claims 3-5),  
method of assembling said structure, (claims 6,7).

An epoxy composition (claims 8-18), and method of making an  
adhesive bond comprising said composition (claims 19-20),  
and a method of making said composition (claim 21).

An assembly comprising said epoxy composition (claim 27).

2. Claims: 22-26

An adhesively bonded assembly comprising an adhesive mass.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/22991

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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